

ABSTRACT

**MULTI-CHANNEL MICROFLUIDIC CHIP
FOR ELECTROSPRAY IONIZATION**

A microfluidic chip formed with multiple fluid channels terminating at a common electrospray ionization tip for mass spectrometric analysis. The fluid channels may be formed within a substrate plate that are in fluid communication with corresponding reservoirs. The electrospray tip can be formed along a defined portion of the substrate plate, wherein the electrospray tip includes an open-tip region at which the fluid channels converge. A top laminate plate may substantially enclose most portions of the fluid channels formed in the bottom polymer plate except for the open-tip region. Another aspect of the invention provides methods for conducting mass spectrometric analysis of multiple samples flowing through individual fluid channels in a single microfluidic chip that is formed with a convergent electrospray tip. The convergent electrospray tip includes an open or exposed distal pointed tip region.